Small Business Innovation Research/Small Business Tech Transfer

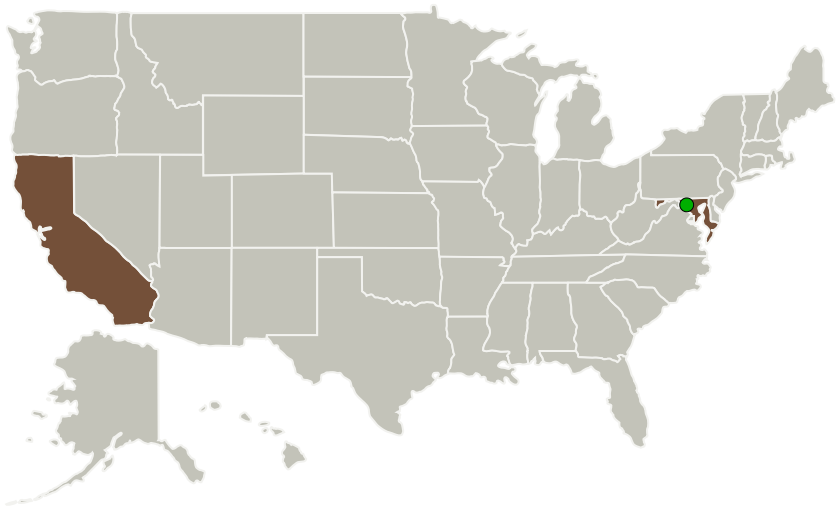
Widely Tunable Semiconductor Laser at 1650nm for Greenhouse Gas LIDAR Detection, Phase I

Completed Technology Project (2016 - 2016)

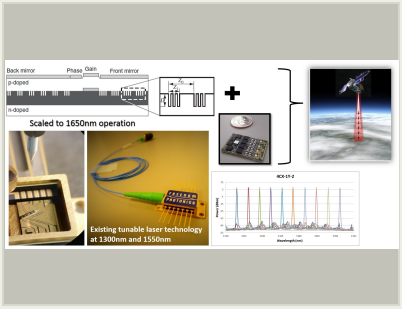
Project Introduction

Methane is about 23 times more potent at trapping infrared radiation than carbon dioxide. The development of low-cost, accurate remote methane sensing technologies is becoming increasingly critical with the need to accurately analyze methane concentrations and distributions throughout the atmosphere. A "Laser Sounder" method is successfully used for carbon dioxide detection, and it utilizes a commercial, telecom grade tunable laser. In this program, we propose to develop a 1651 nm widely tunable laser, which will be based on wavelength scaling of our commercial, rad-hard tunable laser platform, currently available at 1300nm and 1550nm. This laser will allow the same LIDAR technique to be applied to Methane.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Freedom Photonics, LLC	Lead Organization	Industry	Santa Barbara, California
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland



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Primary U.S. Work Locations	
California	Maryland

Project Transitions

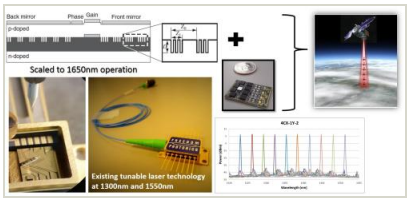
June 2016: Project Start

December 2016: Closed out

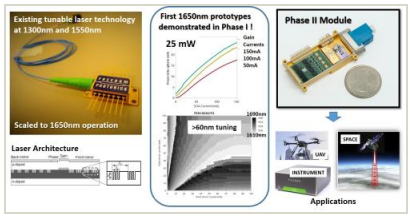
Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139626)*

Images



Briefing Chart Image
Widely Tunable Semiconductor Laser at 1650nm for Greenhouse Gas LIDAR Detection, Phase I *(https://techport.nasa.gov/image/126350)*



Final Summary Chart Image
Widely Tunable Semiconductor Laser at 1650nm for Greenhouse Gas LIDAR Detection, Phase I Project Image *(https://techport.nasa.gov/image/127610)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Freedom Photonics, LLC

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

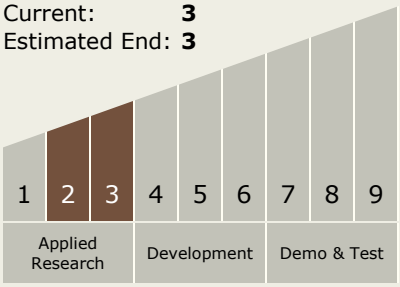
Carlos Torrez

Principal Investigator:

Milan Mashanovitch

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



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Completed Technology Project (2016 - 2016)

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.5 Lasers

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System